

Appl. No. 10/542,654
Amdt. dated March 26, 2008
Reply to Office Action of December 26, 2007

PATENT
Docket No.: 57.0513 US PCT

REMARKS

Status of the Application

Prior to the entry of this amendment, claims 1-60 were pending in this application. Of these, claims 55 and 56 directed to a Wellbore Fluid for Zonal isolation were withdrawn from consideration as a preliminary election. Applicant now affirms this preliminary election and these two claims remain withdrawn.

Claims 37 and 40 were objected to for depending from a rejected base claim, but would be allowable if rewritten in independent form. All other claims were rejected.

The present amendment to the claims:

- amend independent claims 1 and 36;
- rewrites claims 37 and 40 in independent form;
- amend dependent claims 2, 3, 5, 11, 20-22, 27, 30, 38, 41, 43-44, 46, 50 and 53-54;
- cancel claims 12, 14, 28 and 34;
- adds new claims 61-66.

Therefore, claims 1-11, 13, 15-27, 29-33, 35-54 and 57-60 are presented for examination in this amendment. Applicant notes that new claims 61-66 will have been added for the Examiner's consideration. No new matter is added by the amendments, which will now be explained in more detail.

Accordingly, by the present amendments and remarks, Applicant submits that the rejections have been overcome, and respectfully request reconsideration of the outstanding Office Action and allowance of the instant application.

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Acknowledgement of Allowable Subject Matter

Initially, Applicant notes with appreciation the Examiner's indication that claims 37 and 40 would be allowable if rewritten in independent form and/or amended to overcome the indefiniteness rejection.

In this regard, Applicant has rewritten claims 37 and 40 into independent and allowable form. No new matter has been entered. Moreover, original independent claim 36 has been inserted into the allowable subject matter of claim 37 and original independent claim 36 has been inserted into the allowable subject matter of claim 40. Accordingly, an indication of allowability of claims 37 and 40 is requested.

Amendment Fully Supported by the Original Disclosure

The above amendments do not add new matter to the application and are fully supported by the specification.

Claims 1 and 36 have been amended to positively recite a pathway, to state that the sealing element blocks this pathway, and to make clear that maintaining the deformable sealing element under compression urges it into contact with less deformable material bounding the pathway, thereby to maintain the desired seal in the pathway. Support for these amendments is found in the description especially on page 5. A pathway and sealing thereof is mentioned at lines 17 and 20 of that page. Rock and cement are mentioned in the first and last lines of the page. Lines 29 to the end of page 5 point out that these materials and also steel casing or tubing are all materials of high Young's modulus whereas line 5 points out that the modulus of the sealing material should be lower. Thus it was disclosed that the sealing element is being urged into contact with less deformable material (eg rock, cement or steelwork) which is a boundary of the pathway.

Claim 2 has been amended to include the limitation of claim 34.

Claim 3 and likewise claim 38 has been amended to recite the Young's modulus of at least 1000MPa from line 2 of page 6 and then to include the feature of previous claim 14.

Claim 11 has been amended to include the limitation of original claim 12.

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Claim 27 has been amended to include the feature of claim 28 and to specify the set state, as supported by page 7.

Claim 53 has been amplified for clarity.

Claims 5, 20-22, 41, 43, 46, 50, 53 and 54 have received minor amendments. Generally these are self evident corrections. Insertion of a comma after "tubing" in claim 20 is supported by lines 30-32 on page 5.

Applicant respectfully requests reconsideration and timely withdrawal of the pending rejections for the reasons discussed below.

Preliminary Matter concerning NEW claims 61-66

Applicant notes that new claims 61-66 were not addressed by the Examiner in the present Office Action dated December 26, 2007.

New claim 61 is based on page 13 line 10. New claim 62 is based on original claim 53 and includes the amplification in present claim 53. New claim 63 is based on original claim 54. New claims 64 and 65 are supported by the references to rock and cement on page 5. New claim 66 is a method claim somewhat akin to system claim 58 but mentioning that the compression is likewise maintained, which is apparent from the disclosure generally.

Acknowledgement of Foreign Priority, Receipt of Certified Documents

Applicant further notes with appreciation the Examiner's acknowledgment of Applicant's claim for foreign priority under 35 U.S.C. § 119 and the receipt of the certified copy of the priority document Great Britain Patent Application No. 0303881.7.

Acknowledgement of Cited Items

Applicant notes with appreciation the Examiner's consideration of the documents cited in the Information Disclosure Statement filed on May 14, 2006 by the return of the initialed and signed copies of the PTO-1449 Forms.

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Claim objections

The examiner's objections to lack of antecedent basis in claims 5, 21, 30 and 50 have been amended to correct antecedent basis issues.

Preliminary Matters Concerning Claims 21, 24-26 and 57-59

Applicant respectfully submits that claims 21, 24-26 and 57-59 were "not" considered by the Examiner in the present Office Action dated December 26, 2007 (see page 2-3 and 5 of the Office Action). Applicant believes the Examiner may have overlooked the above-noted claims and respectfully requests the Examiner to consider the overlooked claims 21, 24-26 and 57-59. Applicant further notes that a FINAL Office Action may not be issued by the Examiner in view of the instant Office Action having not addressed all of Applicant's claims.

35 U.S.C. §102 Rejections

In the Office Action independent claims 1 and 36 and dependent claims 2-7, 11-20, 27, 28, 30, 32-35, 38, 39, 41-51 and 53 were rejected as anticipated by Cheymol US 4913232. Claims 1 and 36 as now amended make clear that the sealing element is deformable after placement and that it is under compression after placement. The amendments to these claims clearly require that both compression and deformability must be present after placement and that the sealing element serves as a deformable seal to prevent fluid migration. These features distinguish over Cheymol.

Referring to Figs 1 to 4 of Cheymol, as shown together on Sheet 1 of Cheymol's drawings, the general scheme in Cheymol is that a pair of membranes 2 are inflated as shown in Fig 2 to delimit a space 5 between them. This space 5 is then filled by injecting filler behind the membrane 8, which distends as shown in Fig 3 and may eventually rupture as

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illustrated in Fig 4. The filler 11 entirely fills the space 5 to make a seal within the annulus between the casing T and the wellbore P.

The material which is employed as the filler 11 is a cross-linkable elastomer which sets when cross linking occurs after placement. Please note the first paragraph in column 5 of Cheymol, the reference to 'cross-linking' at line 20 of column 6 and the word 'setting' at line 12 of column 8. It is not taught that the set filler 11 will be deformable after it has been placed and has set through cross-linking. Furthermore there is no disclosure that any pressure is maintained on the filler 11 after it has set. Consequently, Cheymol does not disclose, teach or suggest that the filler 11 which is used to form a seal is subsequently maintained as a seal which is both *deformable* and *under compression*.

The membranes 2 are envisaged by Cheymol as providing temporary confinement of the space 5 sufficient to allow the filler 11 to be placed within that space. The description of the inflation of these membranes is in a paragraph at lines 27 to 47 of column 5 of Cheymol. Oil or water is suggested as the inflation fluid which causes the membrane to expand. There is no disclosure that pressure is maintained after expansion has taken place to the shape shown in Fig 2. When expanded, these membranes are required to make an incomplete seal: as taught at column 5 lines 62 onwards, the membranes 2 have grooves 12 which create channels 13 for the expulsion of drilling mud from the space 5. So, these expanded membranes 2 do not themselves form a sealing element which is maintained under compression after placement.

It appears from the drawings that the filler 11 and the ruptured remains of the membrane 8 will block the channels 13. Could the assembly constituted by a pair of expanded membranes 2 and filler 11 between them be regarded as a sealing element as defined by claims 11 and 36? I submit not, because there is no disclosure of any part of such assembly being maintained under compression (still less both in a deformable state and under compression) after placement.

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The examiner contended that cement C would compress membranes 2. I respectfully submit that this is not disclosed. Cement tends to shrink as it has sets, and once it has set rigid it does not apply pressure to the boundaries of the volume within which it has set. Column 4 lines 48 to 55 of Cheymol teaches that cement should be confined to the top portion of a well. As shown in Fig 6 of Cheymol, there is no cement in contact with any of the membranes numbered with a reference numeral 2. Cement C is located only above production zone Z1. The drawing appears to show a membrane similar to the membranes 2 immediately below the cement column, but there is no disclosure that this formed a complete seal nor that it is being maintained under pressure after the cement has set.

At column 8 lines 1 to 11 Cheymol suggests (and immediately teaches away from) a possibility that in place of filler 11, it might be possible to use a substance suitable for inflating the separator membrane. Such a substance would be deformable, in contrast with the setting filler. However, there is no suggestion here that the inflating pressure would be maintained after the membrane has been inflated. The suggestion appears to be merely that the inflated membrane would be a less satisfactory equivalent to a membrane filled by set filler. Consequently there is no disclosure that the membrane would be maintained under compression after it has been inflated.

For these reasons it is submitted that Cheymol does not constitute an anticipation of claim 1 nor claim 36. The dependent claims provide further distinctions from the disclosure of Cheymol. Rather than discussing each and every sub-claim, attention will be drawn to some of them.

Claim 2 as amended is a system claim corresponding to method claim 37 and states that pressure is maintained by supply along a fluid communication element. There is no such feature in Cheymol.

Claims 3 and 38 as amended recite boundaries on Young's modulus and amplify the feature of claims 1 and 36 that the deformable sealing element is maintained urged into contact with pathway boundary(ies) of greater rigidity.

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Claims 4,5, 7-11, 39 and 57,59 and 60 refer to materials and properties of materials which are absent from Cheymol in which there is no suggestion of a sealing material which is viscous or solid yet remains deformable. Claim 27 as amended calls for setting to a form which Cheymol does not mention.

Claims 15-17, 58 61 and 66 more explicitly state that the sealing element remains deformable for a lengthy period. There is no suggestion of this in Cheymol, except in the deprecated suggestion of using a material to inflate without setting, when there is no disclosure that it is maintained under compression.

Claim 21 relates the seal position to cement, which is absent from Cheymol, as is any use of cement which expands as it sets, mentioned in claims 22 and 30.

35 U.S.C. §103 Rejections

As already noted, Cheymol relies on a filler which sets, and does not teach or suggest a sealing element which is maintained under compression whilst also deformable. Cheymol teaches away from a filler which remains deformable, recommending a filler which sets as superior.

In the official action the examiner applied Cheymol against claim 20. As already pointed out above, Cheymol does not have cement in contact with the sealing system using filler and does not teach or suggest that a sealing element should remain under compression in a volume bounded by hard structure including cement.

Claims 9 and 60 were rejected in view of Eoff et al. Eoff discusses the provision of a sealing gel. There is no discussion of zones of a wellbore and Eoff does not therefore lead from Cheymol to the subject matter of any claim.

Claim 10 was rejected in view of Willauer. Willauer describes a plug to be located temporarily in wellbore casing. It is stated in the abstract of Willauer and also in column 4 lines 26 to 44 that the plug is formed from material which hardens and ceases to be

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deformable. The viscoelastic property referred to is utilized as deformability during placement, but not after placement. The requirement of claims 1 and 36 for a sealing element which is maintained both deformable and under compression is absent and so Willauer does not therefore lead from Cheymol to the subject matter of any claim.

Claims 23 and 31 were rejected over Patel US 2005/0199401A. This document is based on a provisional application filed March 12 2004. This is after the international filing date of the present application (February 2004) and of course more than 12 months after its claimed priority date a year earlier. Patel should therefore not be taken into consideration.

Claims 22,29 and 54 were rejected in view of Cronmiller. This document describes a plug formed from cement 18 and slow setting cement 22 confined between a bridge plug 16 and an epoxy plug 24. There is no disclosure of a sealing element which is maintained both in a deformable condition and also under compression. The cement 20 does come under compression but it is not a deformable material.

Claims 64 and 65 provide a further distinction from both Willauer and Cronmiller. These two documents are concerned with plugging steel tubing within a wellbore and do not relate to sealing a pathway which has a boundary formed by rock or by cement.

Claim 52 has been rejected over Duggan which teaches under-reaming. Assuming for the purposes of argument that Duggan does indeed provide a general suggestion of under-reaming, it does not teach that under-reaming should be followed by the sealing of a pathway in a wellbore as set out in Claims 1 and 36. It therefore does not lead onward from Cheymol to the subject matter of any claim.

Authorization to Charge Deposit Account

Applicant believes that no extensions of time or fees for net addition of claims are required at this time. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required therefore (including fees for net addition of claims) are hereby authorized to be charged to Deposit Account No. 19-0615.

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CONCLUSION

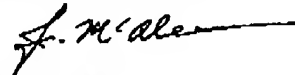
In view of the foregoing, it is submitted that none of the references of record, either taken alone or in any proper combination thereof, anticipate or render obvious the Applicants' invention, as recited in each of claims 1-11, 13, 15-27, 29-33, 35-54 and 57-60. The applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Further, any amendments to the claims which have been made in this response and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Accordingly, reconsideration of the outstanding Office Action and allowance of the present application and all the claims therein are respectfully requested and now believed to be appropriate.

Should the Examiner have any questions or comments, he is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,


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Date: March 26, 2008

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